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SUMMARY

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PLANT GENETICS AND BREEDING OF AGRICULTURAL PLANTS

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PLANT GENETICS AND BREEDING OF AGRICULTURAL PLANTS

by

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1. The use of selected seeds of different varieties of agricultural, horticultural and vine-yard plants brings a rise in production of 15 to 20 per cent, and that of hybrid seeds of 20 to 40 per cent.

2. In plant breeding for agricultural purposes, studies of local populations of autogamous plants (wheat, barley, oats, etc.) were first used in the Rumanian People's Republic, followed by individual selection, and, on a smaller scale, by sexual crossing. By singling out plants from local populations and multiplying their progenies by individual selection, local varieties of wheat, barley, oats, lentils, beans, etc.,have been created in the first stage.

3. After 1948, the method of crossing between subspecies and varieties belonging to the same species followed by training of crosses on the best agricultural ground, combined with individual selection of the progenies, was widely extended by the breeding of autogamous plants. Crossing between subspecies and varieties, remote from one another from a geographical point of view, was largerly made use of, especially with soviet, italian., american, etc. varieties. By singling out élites from among the first crosses generations, and by multiplying them, most of the promising varieties and lineages of the principal crops were originated lately.

4. In the process of breeding allogamous plants (corn, sugarbeet, etc.) the method of singling out families from local populations, as well as of crossing between different subspecies and varieties, followed by individual and mass selection was initially applied. It was in this way that the local varieties of corn and sugarbeet were originated. In a few cases, in the first phases of breeding, the method of inbreeding has also been used.

5. Lately, breeding of allogamous plants, especially corn, was based upon the creation of inbred lineages from native and imported varieties and crosses, by establishing their general and specific cross ability, with the purpose of selecting the best inbred lineages for obtaining indigenous double crosses and crosses between varieties and lineages. In sugarbeet breeding there was also been made use of the creation of tetraploid varieties.

6. The rational use of selected seeds, from various plant varieties and crosses well adapted to local climate and soil conditions, in the conditions of an advanced agricultural technique, contributes to the increase of agricultural production. Thus, in 1962, in different regions of our country we recorded crops of 3.1oo -4.932 kg/ha winter wheat grains, on acreages of 3oo - 3.5oo ha. By applying advanced cropping and breeding methods, yields of 2.ooo - 4.ooo kgr/ha grains by leguminous crops, up to 5.ooo kg/ha corn grains, 5o - 7o tons/ha tomatoes, 3o - 4o tons/ha pimentos and so on. Such yields could not have been even thought of in our country, only twenty years ago. The problem we are now concerned with, is how to make the best of the favourable conditions created by the collectivisation of our agriculture, so as to succeed in extending the use of selected seeds on the whole acreage on which the respective crops are grown and to generalize the above mentiqned high yields

7. The comparative study of the best plant varieties and crosses, the introduction and generalization in the production process of the most recent achievements reached on a world scale in the field of plant breeding , contributes considerably to the rise of agricultural production.

8. The reciprocal exchange of selected seeds, planting material, microbiological preparations and initial breeding material between the different countries is, in our opinion, the right way to contribute to the rise of agricultural production in all countries of the world.

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